



The Reverchon Naturalist

Recognizing the work of French botanist Julien Reverchon, who began collecting throughout the North Central Texas area in 1876, and all the botanists/naturalists who have followed ...

A Collection of Plants from the Headwaters of the Trinity

*Story by Gregory Huber, USDA-NRCS
Odessa, Texas*

In 1852 Captain Randolph Marcy went looking for the origins of the Red River. Several others had tried before him, but all had come up lacking for one reason or another.

It probably wasn't incompetence that had caused this, as some might suggest, but other things like "The Great Raft" and the Spanish Army. Poorly drawn maps of the region also contributed to the problem of locating the headwaters of the river. Humboldt's map was the best around, and it showed the origins of the Red River to be in the Rocky Mountains of northern New Mexico.

It was a little funny how the expedition was organized. Typically, U.S. Army topographic engineers were escorted by infantry and dragoons, but in this case, Brevet Captain George McClellan assisted Marcy in his exploration. Accompanying Capt. McClellan was the surgeon and naturalist, Dr. George Shumard, as well as two Delaware Indians, John Bull and John Bushman, both serving as hunters and interpreters.

Marcy's command travelled by horse, wagon and foot, so he requisitioned 10 horses at Fort Smith and 12 ox-drawn wagons at Preston on the Red River in Texas. Company D of the 5th Infantry, which Marcy commanded, was stationed at Fort

Belknap. This is where Dr. Shumard probably met Captain Marcy, as Marcy returned from an assignment in Washington D.C.

Dr. John Torrey wrote the botany report for the expedition, and included Dr. Shumard's location comments for each plant. During the first four days of May, Dr. Shumard collected 30 different species of plants in a location he described as the *Headwaters of the Trinity*. This would be in the general vicinity of Olney located in Young and Archer counties.

The collection included four grasses, four sedges and 22 forbs. With the exception of one grass, all were known to science. The new species that Dr. Shumard collected was *Poa arachnifera*, also known as Texas bluegrass.

Other species that many would be familiar with included, *Oxytropis lambertii*, *Krameria lanceolata*, *Anemone caroliniana*, *Oxalis violacea*, *Plantago virginica*, *Koeleria cristata*, and *Vulpia octoflora* (then named *Festuca tenella*).

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See You Down the Road

By Ricky Linex
NRCS Wildlife Biologist
Weatherford, Texas

Record-breaking heat and extended droughts across all of Texas have caused many of us to hunt for air conditioning on hot days, but think about the plants on the prairies and forests of Texas. As humans we are looking at a small slice of time relative to the big picture of the planet. How many times has there been drought, and long periods of hot weather in the centuries before us? Native plants will survive this year as they have done in so many other hot, dry periods.

While some, such as the shrub wolfberry, undergo early dormancy and leaf drop to conserve moisture and energy, others soldier on producing seeds and fruits to ensure new plants will be around to replace the old ones that do die out. Summers like this makes one appreciate the early homesteaders, who settled here and survived without air conditioning, along with the native plants that prove they belong here by showing up every year no matter if it is dry or wet.

With this in mind, get outside and walk the pastures to learn what plants look like in a drought. We may get to see them in this shape again next year if this drought doesn't break.

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The total collection included 212 species of which 29 were grasses. Dr. Torrey commented that many of the plants in the collection were included in Dr. Edwin James' 1820 collection, and had not been seen since then.



The reports of these collections could be valuable sources of information for range ecologists. Dr. Torrey was unique in that he generally included the grasses in his reports. His compatriot, Dr. Asa Gray, rarely included the grasses.

Information in this article was drawn from *Exploration of the Red River of Louisiana, in the year 1852*. It can be found online at The Portal to Texas History, <http://texashistory.unt.edu/>.

Mark Your Calendar for September 30th

4th Annual Rolling Plains Quail Research Ranch Field Day

The 4th annual RPQRR field day's theme this year addresses "Bobwhite vs. La Nina"

Perhaps this year we'll have weather in the low 80s, and have to dodge mud holes during the tour. But even if not, the field day will have demonstrations of several practices to help mitigate the effects of the historic drought and heat. For more information, please visit the RPQRR web site at www.quailresearch.org, or contact us at (325) 776-2615.

More information about the field day will be in September's issue of the e-Quail Newsletter online at the web address in this announcement.

Cuero Germplasm Purple Prairie Clover (*Dalea purpurea*)

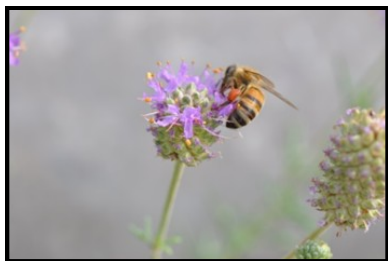
Story by Brandon Carr, NRCS Soil Conservationist

James E. "Bud" Smith Plant Materials Center

Knox City, Texas

Purple prairie clover (*Dalea purpurea*) is a native perennial legume that is distributed throughout central, west, and south Texas. It is adapted to sandy, sandy loam, and other moderately drained soils on prairies, hillsides, and plains. The plant has multiple stems growing from a woody taproot. The leaves alternate and have an average of five leaflets per pinnate compound. Each leaf averages about one inch long. The purple flowers appear on the end of stems and have cylindrical floral spikes which grow about two inches long. The seed pods that are about one-half inch long, and will produce 1 to 2 seeds each. Purple prairie clover blooms from June through September, with mature seed produced from mid-July to October. Cuero Germplasm is a composite plant release from the James E. "Bud" Smith Plant Materials Center (PMC) in Knox City. Seed was collected from native plants located in the southern part of DeWitt County, approximately 11 miles from the town of Cuero, Texas.

Purple prairie clover has many benefits as a conservation plant. It may be used as a component in seed mixtures for pasture and range plantings to provide a legume for nitrogen assimilation. Young foliage provides a high nitrogen foliage for livestock, primarily sheep and goats, and deer. Earlier in the summer, the PMC noticed heavy browsing from deer. One evening, thirty-four deer were counted in the half acre production block. The seed from purple prairie clover provides food for birds and small mammals. Purple prairie clover also attracts a wide variety of pollinator species including Southern Dogface butterflies and bees during the blooming period. It is also used to prevent soil erosion on dam structures, roadsides, and other critical erodible areas. (Photos courtesy of USDA-NRCS)



Bee on Purple Prairie Clover



Purple Prairie Clover Flower



Purple Prairie Clover Field

Operation Idiopathic Decline Update — Last February, RPQRR announced its launch of a comprehensive analysis of disease (including parasites and contaminants) in the decline of quail across the Rolling Plains of Texas. The \$2 million research effort involves scientists from the Texas Institute of Environmental and Human Health at Texas Tech, the College of Veterinary Medicine at Texas A&M, Caesar Kleberg Wildlife Research Institute, and the Oklahoma Department of Wildlife Conservation. For more details on the specific research projects see [e-Quail V3N5](#). A total of 19 ranches and two TPWD wildlife management areas (WMA) in Texas, and 10 WMAs in Oklahoma have been identified as study sites. The RPQRR hosted a training session on July 12 for the collaborators to fine tune sampling protocols and train field personnel. Three "trap teams" will be deployed later this month with the objective of trapping quail (and mosquitoes) for subsequent analyses.

Trapping will be conducted again in mid-October. The study is expected to continue for the next 3 years.



STEWARDS OF THE LAND

Hailey Ranch Receives 2011 Lone Star Land Steward Award

Story by Randy Henry, USDA-NRCS

Rob Hailey, owner of the 2,560-acre Hailey Ranch in Abilene, Texas, received the 2011 Lone Star Land Steward Award for the Rolling Plains region. The ceremony was held in Austin, Texas, and recognized land stewards who represented private ranches in various ecological regions in the state. Recipients also were recognized for their achievements in wildlife management associations, contributions in outreach and education, along with their corporate efforts.

The Texas Parks and Wildlife Department (TPWD) and Sand County Foundation recognized these land stewards and ambassadors of conservation, who have shown exemplary efforts in managing their property. Native habitat restoration and enhancement that benefits wildlife is a common thread among the recipients of this year's Lone Star Land Steward Awards. The Hailey Ranch has native range/brush and cropland as habitat types.

The award's objectives are to recognize private landowners for excellence in habitat management and wildlife conservation on their lands, publicize the best examples of sound natural resource management practices, encourage youth education and participation in promoting responsible habitat management to improve ecosystem health, promote long-term conservation of unique natural and cultural resources, promote ecosystem awareness, and acknowledge the best conservation practices in the state's 10 ecological regions.

Described as "the hardest working man in wildlife management," Hailey, in his own humble way, is considered an evangelist for natural resource conservation, hunting ethics, and land stewardship within the Rolling Plains region. He also has allowed USDA-Natural Resources Conservation Service (NRCS) access to his land for sampling soils at various soil layers.



Rob Hailey, center, owner of the 2,560-acre Hailey Ranch in Abilene, Texas, receives the 2011 Lone Star Land Steward Award from TPWD Commissioner Ralph Huggins, left, and TPWD Executive Director Carter Smith, right, during the award ceremony recently held in Austin. (Photo Credit: Ricky Linex, USDA-NRCS)

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Conservation Time Passages

The Botanical Gazette—Volume XI, January 1886, No. 1
Published in Crawfordsville, Indiana, by the
editors—John M. Coulter, Wabash College, Crawfordsville, Ind.,
Charles R. Barnes, Purdue University, Lafayette, Ind., and
J. C. Arthur, N. Y. Agri. Exp. Sta., Geneva, New York

“Botanizing In Texas”

By J. Reverchon

This article by Julien Reverchon describes his 1885 trip from Dallas County to Llano County, Texas. We added current scientific and common names for ease in reading because the original article listed only scientific names. Many of them have been renamed in the 125 years since this article was written by Reverchon. A special thanks to Greg Huber, USDA-NRCS, in Odessa, Texas, for sending this jewel of botanical history to us.

By “botanizing” I do not mean taking a railroad and stopping at such and such a station, taking a ramble or two in the neighboring hills, or sometimes jumping from the cars at a coal station, tempted by some tantalizing plant, and running back with only the top of said plant, at the call of the imperious whistle, and after that running may be a hundred miles before stopping again. That is not my way, as the railroads do not pass exactly where many nice things are found, and I don’t care to be in a hurry.

So we started, my wife and I, and Robert Freeman, April 8, 1885, from our home in Dallas County [Reverchon’s dairy farm was located in what is presently the Oak Cliff neighborhood of Dallas]. Freeman was a fine fellow, exactly fit for driving, hunting, fishing, and other duties invaluable on such a trip. Our covered wagon, drawn by a good team, was packed with provisions, drying papers, arms, etc. It would seem as if we were fixed to travel any length to describe our appearance, and must not forget that I am writing for botanists and anxious that I begin to botanize.

The evening sees us in the *Lower Cross-Timbers*, a vast belt of sandy post-oak land that extends a long distance north and south, and separates two regions of extensive prairies. As the season was very backward few plants were in bloom, and I will only mention the *Astragalus distortus* (bentpod milkvetch). After that we reached some cretaceous hills bordering a vast prairie, and here for the first time a botanist traveling from the east will find *Actinella scaposa* (*Tetraneuris scaposa* - stemmy four-nerve daisy), *Scutellaria Wrightii* (Wright’s skullcap), and *Quercus virens* (*Q. virginiana* - live oak), all three very common through the west. Along the streams he would notice *Vitis rupestris* (sand grape).

After crossing some extensive prairies, we come in sight of the valley of the Brazos. There are limestone bluffs intermixed with sandy patches of post-oaks, some fine prairies, and beautiful clear streams.



(Photo Courtesy of USDA-NRCS/
Clarence A. Rechenthin)

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Western Primrose
(Calylophus hartwegii)

Western Primrose (*Calylophus hartwegii*), top, and Scarlet leatherflower (*C. texensis*), right, were two plant species Reverchon saw on the prairies near Cowhouse Creek and the Lampasas River. (Photo Credit: Ricky Linex, USDA-NRCS)



Scarlet leatherflower
(C. texensis)

There we collected *Psoralea esculenta* (*Pedimelum esculentum* - large Indian breadroot), *Townsendia sericea* (stemless Townsend daisy), *Vesicaria recurvata* (*Lesquerella* genus - a species of bladderpod) and *densiflora* (denseflower bladderpod), and *Berberis trifoliata* (*Mahonia trifoliata* - agarito). The mountain cedar (*Juniperus occidentalis*, var. *conjungens*) (now *Juniperus ashei*, Ashe juniper) also appears for the first time.

We crossed the Brazos near Comanche's peak, and reached the Paluxy's valley the next day, through a sandy forest interspersed with rocky prairie [Reverchon visited Comanche Peak in June 1882, where he collected and named Comanche Peak Prairie Clover-*Dalea Reverchonii*, as published in *The Reverchon Naturalist*, Issue 2, 2010]. Along streams we collected *Ranunculus macranthus* (showy buttercup). We find nothing new in this valley or in the regions south of it for about twenty miles, consisting of woods, prairies, and hillocks.

On the 17th we crossed the Bosque River, and found ourselves in an extensive prairie, where was discovered a rare plant, *Amsonia longiflora* (tubular bluestar). We also admired the numerous shades of *Castilleja purpurea* (prairie Indian paintbrush), with flowers varying from dark red to white, and from orange to light straw color.

About Cowhouse Creek and Lampasas River, we were detained over a week by nearly continual showers. On the prairies we noticed *Gaura coccinea* (scarlet beeblossom), *Oenothera Greggii* (now *Calylophus hartwegii* - western primrose or Hartweg's sundrops), and *Melampodium cinereum* (hoary blackfoot); along the streams, *Clematis coccinea* (now *C. texensis*, scarlet leatherflower) and *Nemophila phacelioides* (largeflower baby blue eyes); while the characteristic species of the limestone bluffs are *Astragalus Reverchonii* (now *A. lotiflorus* - lotus milkvetch), *Psoralea hypogaea* (now *Pedimelum hypogaeum*- subterranean Indian breadroot), *Erodium texanum* (Texas filaree), *Vesicaria Engelmannii* (possibly now *Lesquerella Engelmannii* - Engelmann's bladderpod), and a *Sisyrinchium* (a blue-eyed grass) that I expect has no name yet.

I also found a little patch of *Dodecatheon Meadia* (common shooting star, as seen on the cover of Shinnery and Mahler's Illustrated Flora of North Central Texas). On some rocky hills were the following: *Morus parvifolia* (likely *M. microphylla* - Texas mulberry), *Mimosa fragrans* (now *M. borealis*- fragrant mimosa), *Arenaria Benthamii* (hilly sandwort), *Galium texense* (Texas bedstraw), *Acalypha Lindheimeri* (now *A. phleoides*- three-seeded mercury or shrubby copperleaf), *Erysimum asperum* (western wallflower), and *Hedeoma acinoides* (slender false pennyroyal); in clefts of the rocks the two ferns *Notholaena dealbata* (now *Argyrochosma dealbata* - powdery false cloak fern) and *Cheilanthes lanuginosa* (now *C. feei* - slender lipfern).

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On April 25th we reached Lampasas, a town celebrated for its beautiful sulfur springs, which attract many people. Near this place I noticed for the first time *Thamnosma Texanum* (now *T. texana* - Dutchman's breeches), *Astragalus Wrightii* (Wright's milkvetch), and *Menodora heterophylla* (low menodora).

At Lampasas we took the San Saba road, due west through a prairie country dotted here and there by high rounded hills. On the next day, after crossing through a deep gap between two picturesque bluffs, crowned with shrubbery, we left the cretaceous formation for the red carboniferous sandstone. Instead of good grazing prairies there were poor, gravelly, rocky or sandy soils, all hoary with *chaparrals* or thickets.



When Reverchon reached the town of Lampasas, he saw the plant species *Thamnosma Texanum* for the first time that is now Dutchman's breeches (*T. texana*). (Photo Credit: Ricky Linex, USDA-NRCS)

These thickets are mostly formed by the following: *Prosopis juliflora* (now *P. glandulosa*- honey mesquite), *Diospyros Texana* (Texas persimmon), *Colubrina Texensis* (Texas colubrina or hog-plum), *Lippia lycioides* (now *Aloysia gratissima*, whitebrush), and *Opuntia leptocaulis* (now *Cylindropuntia leptocaulis*- Tasajillo). Among other plants, I note *Astragalus Lindheimeri* (Lindheimer's milkvetch), *Cooperia pedunculata* (prairie rainlily), *Cereus paucispinus* (likely *Echinocereus coccineus*- scarlet hedgehog cactus), *Cassia pumilis* (likely *Senna pumilio*- dwarf senna), and *Argythamnia ophioides* (now *Argythamnia humilis*- low wild mercury). In nearing the Colorado, the county is more regularly sandy, and we found *Senecio ampullaceus* (Texas groundsel) and *Festuca seiurea* (now *Vulpia elliottea* - squirreltail fescue) in abundance.

We crossed the Colorado the 27th. It is a deep stream, bordered on both sides by precipitous bluffs, on which I found *Cheilanthes tomentosa* (wooly lipfern) and *Alabamensis* (Alabama lipfern), and also for the first time the beautiful *Pellaea flexuosa* (now *P. ovata* - ovateleaf cliffbrake).

After traveling two or three miles west the Colorado, over a red sandstone country, we found ourselves again in a hard limestone region. Here the rains overtook us again, and we were compelled to pay a little more attention to the botany of that place.

Here the little prairies were dotted with the very beautiful *Phlox Roemeriana* (goldeneye or Roemer phlox); the streams were bordered with *Mimulus Jamesii* variety *Texensis* (roundleaf monkey-flower); while on the rocky bluffs I noticed *Selaginella rupestris* (rock spikemoss, PLANTS database does not list this plant for Texas-possibly another species of spikemoss) and *Rhus virens* (evergreen sumac).

On the 30th, the journey was resumed in spite of threatening weather. We descended the San Saba Valley, full of mesquit (mesquite), where I found a plant most abundant on the plains of western Texas. It is an *Apium* (wild celery) proper, but not the same plant that was collected by me and distributed by Mr. Curtiss. This one must have another name, as the plant found on the plains is certainly the one collected by Captain Pope.

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An original 1882 mounted specimen of *Dalea Reverchonii* from Comanche Peak in Hood County, Texas, still exists with the detailed label (bottom left) written by French botanist Julien Reverchon.

In a branch of San Saba River, I noticed some *Schollera graminea* (likely *Heteranthera dubia* - grassleaf mudplantain) in bloom. At the San Saba River, we took the Llano road south, and soon afterward pitched our tent in a small valley that would have been a fine place for anyone to stop, but to me it looked like a botanist's paradise. There was a long hill all capped with perpendicular rocks, where we found *Tinantia anomala* (false dayflower), *Specularia Lindheimeri* (now *Triodanis coloradoensis* - Colorado venus looking-glass), *Bouchetia erecta* (paintedtongue), *Abutilon Wrightii* (Wright's Indian mallow), *Gonolobus reticulatus* (now *Matelea reticulata* - netted milk-vine), and a good many more that I have already mentioned.

Beyond this valley lay a country all intermixed with sands or rocky hills, and very disagreeable to travel over. In the valleys the principal trees are mesquit and post oaks; on the hills, mountain cedars and *Quereus Durandi* (*Q. sinuata* var. *breviloba* - Bigelow's oak). We finally camped on

Cherokee Creek, in a better looking country. The creek was full of *Nuphar advena* (now *N. lutea* ssp. *advena* - yellow pond-lily), and the banks were lined with *Carex comosa* (longhair sedge), and a remarkable variety of *Carex acuta* (a sedge but this species is not listed in Texas).

The 2nd of May, we reached the granite region of Llano. It first appears as a few granite boulders cropping out among the post oaks, and along with them we noticed the following plants: *Tephrosia Lindheimeri* (Lindheimer's hoarypea), *Sida Lindheimeri* (showy sida), and a small plum tree (*Prunus glandulosa*), (likely *P. texana* - peach bush) covered with fuzzy, unripe fruits, looking very much like small peaches. The people said they were "awful" good when ripe.

The Babyhead Mountains were soon in view, a dark mass of nearly naked granites. I was disappointed in finding but two plants I had not seen before, *Pellaea Wrightiana* (Wright's cliffbreak) and a *Se-laginella* that our best authorities have considered only a form of *rupestris*. In spite of the honorable opinion, I am very much inclined to think it a different species. Beyond those hills, in a sandy valley, we collected *Vesicaria grandiflora* (now *Lesquerella pallida* - White bladderpod), *Hymenatherum Wrightii* (likely *Thymophylla pentachaeta* - common dogweed), and an *Indigofera* considered by some to be *leptosepala* (*Indigofera miniata* var. *leptosepala* - western indigo), but quite different in appearance.

At the town of Llano, after we had crossed the river of that name, we turned our faces toward the setting sun, going up the Llano valley. There in the sandy forests were found *Dalea nana* (dwarf dalea or dwarf prairie clover) and *lasiathera* (*D. lasiathera* - purple dalea), *Paronychia setacea* (bristle nailwort), *Eritrichium Texanum* (*Cryptantha texana* - pick me nots), *Vesicaria argyrea* (*Lesquerella* sp. - bladderpod), and *Houstonia humifusa* (matted bluet).

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On the 4th, being along the Llano, we stopped on account of numerous species calling may attention. In the scanty soil among the rocks that border the tumultuous Llano were *Boerhaavia tenuifolia* (this species name is no longer used but he is referring to a spiderling), *Nicotiana repanda* (fiddleleaf tobacco), *Gilia incisa* (*Giliastrum incisum* - splitleaf gilia) and *acerosa* (*G. acerosum* - bluebowls), *Bouteloua Burkei* (*B. trifida* - red grama), and a shrubby *Croton* not yet named. In the river *Herpestis chamaedryoides* (perhaps a *Bocopa* - water hyssop) was found.

The next day, after crossing a very poor country, a perfect desert, where *Plantago Patagonica* (bristlebract plantain) was about the only thing growing, with here and there a tuft of *Hermania Texana* (Texas hermania) not yet in bloom, we pitched our tent at the very foot of House Mountains, a mass of bold, denuded rocks, quite high for Texas, where there are not true mountains this side of the Pecos. This proved to be a very interesting locality for a botanist, and for a tourist it is certainly so. And now I am sorry we did not stay there a week instead of three days.

During that time I had my hands more than full. The ferns were *Woodsia obtuse* (bluntlobe cliff fern), *Notholaena Hookeri* (unknown species of cloak fern), *Pellaea flexuosa* (with immense fronds) (now *P. ovata*- ovateleaf cliffbrake) and *Wrightiana* (Wright's cliffbreak), *Cheilanthes Lindheimeri* (fairy swords or Lindheimer's lipfern), and a variety of *tomentosa* (wooly lipfern) near Eatoni.



Comanche Peak, above, is one landmark Reverchon crossed in his travels from Dallas to Llano while discovering and recording the grasses, trees, plants, and more along the way. As the inset photo shows, this may have been the same kind of vision he saw in 1885. (Photo Credit: Randy Henry, USDA-NRCS)

A legacy and passion for plants 125 years later

Julien Reverchon always will be remembered for his landmark discoveries and scientific advancements in botany throughout North-Central Texas, but his family tree is still active in the study of plants today. Shirley Lusk, who is the 86-year-old great, great niece of Reverchon, currently studies plants in many areas of Texas, but mainly within Montague and Cooke counties. She mentors students at the North Central Texas College in Gainesville, and holds a Bachelor's Degree in Chemistry from Oklahoma University.

Lusk helps with plant identification in the Botany Department for the junior college and local ranchers, and recalls how she got her start in botany. "My family was very influential, and I got interested in plants from my parents when we moved into Grayson County," Lusk said. "We also had a beautiful prairie on our farm in Dallas back then, and that's where I got my interest as a young girl." She presently is enjoying life among the plants and landscapes of North-Central Texas while helping others discover a passion for plants like her great, great uncle did 125 years ago.

(Continued from page 4—Stewards of the Land)

Ricky Linex, NRCS wildlife biologist based in Weatherford, was one conservation leader who nominated Hailey to TPWD for the Rolling Plains region.

“There are 25 food plots on Hailey Ranch that are planted and maintained on an annual basis, mainly wheat for the deer and sunflowers for doves and quail,” Linex said. “Hailey is a student of plants, and can tell you the names, values, soil preferences, and how to manage the hundreds of native plants on the ranch.”

“As a testament to Rob Hailey’s ranch management, you can walk a short distance nearly anywhere on the ranch and see a hundred different plant species,” Linex said.

Over the past 15 years, the ranch has used ecologically sound and proven management practices, such as disking, livestock deferment, prescribed burning, food plots, principles of plant succession, and wildlife-friendly water troughs to enhance wildlife habitat. The ranch hosts numerous field days and an annual youth hunting event for more than 50 kids and parents.

“Whenever someone comes to visit Hailey Ranch, whether a paid hunter or casual visitor, Rob Hailey makes their experience one of the better events they have enjoyed,” Linex said.

Besides TPWD and the Sand County Foundation, other sponsors for the award included Gulf States Toyota, U.S. Fish and Wildlife Service’s Partners for Fish and Wildlife Program, Texas Wildlife Association, Lower Colorado River Authority, USDA-NRCS, Bamberger Ranch Preserve, Llano Springs Ranch, Ltd., Texas Agricultural Land Trust, and both the Texas and Southwestern Cattle Raisers Association.

To view the video on Hailey Ranch’s presentation at this year’s award ceremony, visit <http://www.youtube.com/watch?v=JBVNkHdsIQI>.

A special thanks to Texas Parks and Wildlife Department for contributing to this story.



Hailey examines the seeds of a Leavenworth eryngo, which is one of many plant species found on the Hailey Ranch. Hailey won the award for his excellence in land stewardship within the Rolling Plains region. (Photo Credit: Randy Henry, USDA-NRCS)

Prairie Agalinis (*Agalinis heterophylla*)

Story by Znobias Wootan
Native American Seed Company
Junction, Texas

A beautiful flower appeared around Texas in abundance last fall. Prairie agalinis (*Agalinis heterophylla*) bloomed profusely in some parts of the state. This native annual grows from 1-2 ½ feet tall, and can at times be sprawling depending on how large it becomes. It prefers full or partial sun and moist sites. The dark green stems are grooved and hairless and branch at an almost 90-degree angle. It has a distinguishing characteristic of three-lobed lower leaves at the base of the stems. The stems of this annual will turn black as the seeds mature in late-fall. When the seed capsules split the wind can carry these tiny seeds a long distance in some cases. Prairie agalinis spreads by reseeding itself, and does not reproduce from roots or cuttings. However, it does have a fibrous root system, and there is speculation that it may have a special relationship with other plants. Agalinis may use some available nutrition from other plants such as the prairie grasses. In return, its dainty, vibrant flowers attract native plant enthusiasts into the prairie which then collect the native seeds and disperse them. Agalinis flowers bloom for about a month and are an inch long, but vary in color from lavender to purple.

There are other similar species such as Plateau agalinis, *Agalinis edwardsiana*, and *Agalinis tenuifolia*, but the color is not as vibrant as Prairie agalinis. The absence of any attractive floral scent is disappointing. The corolla is tubular in nature and consists of five spreading lobes with the inside of the flower dotted with specks of dark purple and two little patches of yellow. It is a known larval host for the Buckeye butterfly and the Orange Sallow moth, and a very attractive nectar source for Bumblebees and other long-tongued bees. Prairie agalinis can be found everywhere in Texas except west of the Hill Country, and it can also be found in bordering states to the north and east of the Lone Star State. Imagine what a nice surprise it was to find acres of this striking native just ripe for the picking, or combining as the case may be. During the recent Blackland Prairie harvest that took place in Bosque County such a site was discovered. What a lovely addition this native would make to any landscape.



Photos courtesy of the Native American Seed Company

This Prairie agalinis bloom is an attractive nectar source for Bumblebees and other long-tongued bees.



The dainty, vibrant flowers attract native plant enthusiasts into the prairie seeking out the plant.

Evening Primrose Family (*Onagraceae*)

Story by Troy Mullens

Photos by Troy and Martha Mullens

*Members of the Cross Timbers Chapter of Master Naturalists,
Native Plant Society, and National Audubon Society*

Members of the evening primrose family are annual or perennial herbs or half-shrubs with simple basal leaves which can be alternate or opposite, entire, toothed or pinnately lobed. Flowers can be basal, axillary, terminal, solitary, in spikes, or panicles (branched inflorescences). The fruit is a capsule, usually one-seeded, which in some species will discharge that seed upon maturity. Most bloom either in the cool of the morning or the evening.

Onagraceae species have two-four very delicate petals from bright white to pastel pink to lemon yellow. The calyx (petal-like lobes) and stamens are usually two-four, although a few have parts in fives. The ovary is conspicuously below the anther parts of the flower. The stigma in most species is X-shaped, but in a few it is rounded. The shape of the stigma and the position of the stamens distinguish one genus from another.

The family consists of 650 species worldwide in 18 genera found mostly in temperate or warm areas of the Americas. There are five genera represented in North-Central Texas, of which we will discuss four.

The **Genus *Gaura*** is represented by 10 species in our area (20 in North America). Members of this genus are weedy, ranging from 1-3 feet tall with leaves borne singly on stems and frequently in basal rosettes. Leaves are about 1-3 inches long, lanceolate with entire to sparsely dentate margins. The flowers are borne in spikes, racemes, or are branching. They usually have four petals on the upper side of the flower with eight prominent stamens with reddish-brown anthers and one pistil with a four-part stigma.

Gaura can be distinguished from other members of the evening primrose family by the tall column of unopened buds above the blooms. The flowers open in the morning and wilt by the afternoon. Colors range from white to pink to red, and often change to a darker color later in the day.



Wild Honeysuckle (*Gaura suffulta*)

The two representatives I have chosen are commonly called wild honeysuckle or bee blossom. They are named wild honeysuckle because of the sweet smell similar to honeysuckle and bee blossoms, for they attract both native bees and European honeybees. They are also referred to as waving butterfly because the four petals resemble fluttering butterfly wings, as well as the long anthers suggest butterfly antennae. The name *gaura* comes from a Greek word meaning superb.

Gaura suffulta is also known as roadside gaura and blooms from March to June. *Gaura coccinea* is often called scarlet due to the red anthers on white filaments, or smooth gaura, and blooms from April to July.

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Both are found from east Texas westward to the Trans Pecos and northwest to the Panhandle. These two species can be distinguished by the type of soil in which they grow. *Coccinea* is found in sandy or calcareous soils whereas *sufulta* prefers richer soils and is often found in bar ditches and along roads. The main identifying characteristic of *coccinea* is that the unopened flower buds tend to be crowded together at the top of the inflorescence, giving it a somewhat flat-topped appearance. Other species are difficult to differentiate because they hybridize easily.

Gaura has been used as a natural remedy for treatment of rheumatism, burns, and inflammation. The Lakota people used it as a “horse catcher” by rubbing it on their hands before rounding up their horses.

The **Genus *Oenothera*** is represented by 13 species in North-Central Texas (124 species in North America), and I have chosen four of the most common to discuss. The genus name is based on the Greek word *oeno*, meaning wine, which may mean that this group was used as a flavoring in wine or that eating them encouraged people to drink wine.

Members of this genus have flowers with four sepals bent down at flowering time, four petals, eight stamens (one exception among Texas species), with the ovary inferior. Most members open near sunset and close the next morning (hence the name evening primrose) and are pollinated by moths. *Oenothera* have extremely long floral tubes exemplified by long “red neck” of *O. macrocarpa* through which the style extends downward to the distant ovary and seedpods vary between species.



The Navajos considered the evening primrose to be such an important healing plant that they called it a Life Medicine. They used it to treat toothaches, irritated eyes, coughs, sore throats, as well as digestive upset, diabetes, heart disease, menstrual discomfort, and internal bleeding. It was also used as a laxative, sedative, diuretic, and in a poultice to promote healing of wounds and boils. Its magic ingredient is gamma-linolenic acid which is a nutritionally important oil extracted from the seeds.

Oenothera macrocarpa is a large-flowered, showy yellow perennial species with short stems which blooms from April to August on mainly caliche-type soils. Common names include fluttermill, red-neck evening primrose, Comanche campfire, canyon blue leaf primrose and Missouri primrose (some books carry the name *Oenothera missouriensis*).

The flowers appear to grow directly from a woody base with no apparent stems. The plants may be from 4-15 inches tall with narrowly lanceolate simple leaves 2-4 inches long with entire or sparsely fine-toothed margins. The flowers composed of four petals are up to 3 ½ inches wide with a floral tube 2-4 inches long.

Mature seed capsules may reach 2 ½ inches long with wings. Native Americans and settlers used the entire nutritious plant in salads, as cooked greens, and as a relaxing tea brewed from the leaves. The Hopi Indians smoked the leaves as tobacco.

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Oenothera laciniata is the annual cut-leaved evening primrose found in the eastern half of Texas westward to Trans Pecos and northwest to the Panhandle growing mainly in disturbed sandy or alluvial soils (infrequently on limestone) and blooming from April to June, occasionally to October.



It is an erect to reclining (frequently prostrate) ascending plant 2-10 inches tall with simple, alternate, elliptic leaves 1-2 ½ inches long and ½ inch wide with margins pinnately cleft into rounded lobes or toothed (hence the name). The pale yellow flowers are small, ¼-1 inch wide, borne singly in the axils, with four heart-shaped petals, eight stamens, and one pistil. Four pinkish sepals united at the base form the ½-1 ½ inches long floral tube. Found in the same area, but easily distinguished is the variety var. *grandis* (treated as a species by some botanists) with large flowers up to 3 inches wide.

Oenothera rhombipetala, the four-point evening primrose, is an annual or biennial growing in sandy or sandy-calcareous soils in the northern half of the state, blooming from May to July. (see photo)

It stands 1-3 feet tall usually with one erect stem, sometimes with several ascending branches. The leaves are 2-3 inches long, narrowly lanceolate with sparingly dentate margins, and arranged densely around the stem becoming progressively smaller approaching the inflorescence. Numerous unopened buds covered with red spots crowd at the top of the long slender inflorescence with several open flowers lying just below. Yellow flowers are 1-1 ½ inches in diameter with a floral tube 1-1 ¼ inches long and open just before sunset. Mature capsules about ½ inch long curve upward.

Oenothera speciosa is the common pink to white flower that adorns eastern and central Texas roadsides from March through June. Common names include pink evening primrose, showy primrose, pink showy primrose, pink ladies, Mexican evening primrose, Mexican primrose, white evening primrose, and even buttercup. It was one of Lady Bird Johnson's favorites.

The pale petals seem delicate, but this primrose is actually a hardy, drought-resistant plant that will grow in most any soil as long as it is well drained. It does so well that it can become invasive in a yard or garden, but the bees, moths, and hummingbirds love it. It is prolific and spreads by seeds and rhizomes to form dense banks of beautiful pink blossoms.

The tender young leaves of the showy primrose can be cooked as a green vegetable or add flavor to a salad. A good quality yellow dye can be extracted from it.

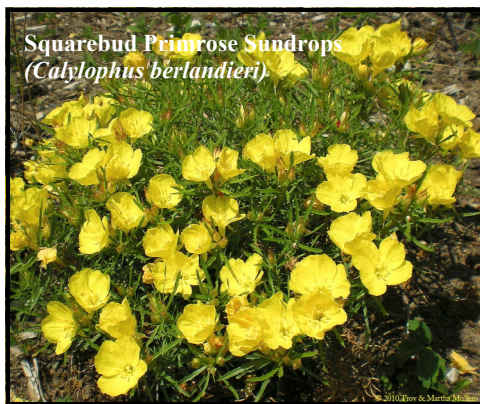


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Pink evening primrose is a lax, sprawling perennial plant 6-24 inches high with a few erect stems, but usually with reclining stems rising at the tips. Leaves are alternate, lanceolate one-four inches long with pinnatifid margins. Flowers grow as a cluster at the ends of the branches and vary in color from white to rose-pink. The cup-shaped flowers are 2-3 ½ inch wide and marked with dark pink veins. four sepals are united into a slender tube below the petals, but are pushed open and back as the petals open. The floral tube 1/2-3/4 inch long.

The **Genus *Calylophus*** is named for the crested (lophus) calyx (caly) surrounding the unopened flower bud. Like *Oenothera*, *Calylophus* flowers have extremely long floral tubes through which the style extends to the ovary. The characteristic that identifies this genus is that the stamens are attached around the rim of the floral cup, and the stigma is rounded or peltate in contrast to the X-shaped stigma of *Oenothera*. Species are distinguished by the shape of the buds and the seedpods. There are three species in our area and six in North America, but I am only going to discuss the one that blankets the prairie at Tandy Hills in April and May.



Calylophus berlandieri (*C. drummondianus* subsp. *Berlandieri*) is commonly called square bud primrose, sundrops, or berlandier's sundrops. It is a widespread perennial in North-Central Texas and the West Cross timbers from March to August. Sundrops is an erect, bushy, semi-woody plant 6-24 inches tall with narrow slightly dentate leaves 1-3 inches long. The yellow flowers are about two inches wide with a black throat and a black stigma that extends well past the stamens. Some varieties have a yellow throat and yellow stigma, or a combination in which one of these features is black and one is yellow. A close relative *Calylophus serrulatis* is distinguished by a stigma which does not extend past the stamens.

Genus *Stenosiphon* is represented by one species in our area, ***Stenosiphon linifolius*** or false gaura. It can be seen in fields and on gentle slopes in limestone soils in North-Central Texas, Dallas to Grayson County through the West Cross Timbers, south to the Edwards Plateau and northwest to the Panhandle, flowering May to July (sometimes to October). It is a large, open perennial plant that grows 3-8 feet tall with only a few slender branches. The stems are semi-woody and reddish-brown in the lower part of the plant, but stiffly herbaceous and light green in the upper part. The narrow leaves are alternate, sessile, and lanceolate, about 2-3 inches long with entire margins, becoming smaller as they near the blooming spikes. The elongated cluster of flowers which bloom from July to October is crowded on a long slender inflorescence. Individual flowers are only 1/4-3/4 inches wide.

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